Measuring the Benefits of the Emergency Care Practitioner

better skills
better jobs
better health
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<th><strong>Work Area:</strong></th>
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Acknowledgements

Measuring the Benefits of the Emergency Care Practitioner is the fruition of three years work. Originating with the audit of ECP trial sites the overriding objective has been to develop a workforce fit for purpose to deliver unscheduled care across healthcare boundaries, by gathering evidence of safe and effective practice.

This work could not have been delivered without the unstinting support of Professor Sir George Alberti, the Emergency Care Practitioner Leads from Strategic Health authorities and ECP Trials Sites. I am indebted to them all.

I would especially like to thank Chris Wintle, Belle Connell, John Gosnold and Mark Bilby from the Emergency Care Practitioner Team at Skills for Health.

This document should be read in conjunction with the Competence and Curriculum Framework for the Emergency Care Practitioner (2007).

Dr Hugo Minney
Measuring the Benefits of the Emergency Care Practitioner

‘Not everything that can be counted counts, and not everything that counts an be counted’ – Albert Einstein

New, enhanced and extended roles can bring many benefits; however unless they meet the needs which first initiated them, they are not “Fit for Purpose”. In many cases new roles bring many ancillary benefits, some of which won’t have been anticipated at the point that the role was developed, and ECPs are an excellent example of this. On the other hand, introducing a new role into an otherwise hopelessly inefficient practice could make the team function much better – the improvement is caused by change, not by the new role; this aspect is also examined.

It makes sense to start with the need and how far ECPs fulfil this, and then examine what other benefits ECPs bring.
Aims of the Emergency Care Practitioner Role

The numbers of people calling emergency ambulances, arriving at Emergency Departments, and the numbers of emergency, urgent and unscheduled bed days, have both been increasing for a number of years\(^1,2,3\). It is thought that many of those attending do not need to be in Emergency Departments and would be better served elsewhere\(^4\), whether they require minor interventions or even no intervention\(^5\). One way to resolve this is to bring the hospital to the patient, and this is the primary driver behind the development of the ECP role\(^6,7,8,9\). In order to achieve this, the ECP needs a high rate of case completion at the point of contact with the patient, i.e. the skills to diagnose, treat, and identify complicating factors which may require a more advanced assessment. They may also refer the patient to another care pathway, e.g. a community service, pharmacist or social services, which is more appropriate than a hospital attendance or admission\(^10\). By reducing attendance at Emergency Departments the ECP may help to reduce hospital unscheduled admissions and bed days.

Other Potential Benefits Of Emergency Care Practitioners

Through the development of the ECP, many other benefits have emerged as their practice developed. This is especially true as ECPs work in a number of different environments, usually by rotation, and the skills and experience of each role and environment often directly benefits their practice in the others\(^3,8\).

Whilst there are other benefits of the new role, only benefits which directly impact on patient outcomes, patient experience, cost of the service or staff motivation are recorded here, because this document is about the tangible and measurable benefits of the ECP role\(^11\).

- **Emergency Care Practitioners working in Out of Hours services**

  ECPs are currently deployed as the mobile response to attend patients at home for primary care Out of Hours services\(^8,6\). They can act as the eyes and ears of the Out of Hours doctors, and deliver care and advice and obtain a prescription issued by the doctor in charge. In some regions they work under the supervision of doctors as one of the first points of all contact with the Out of Hours service, including telephone advice, urgent care centre attendees and home visits.

  The cost of ECPs is commonly considered to be considerably below the cost of doctors in this role (£40 per hour compared to estimates of over £150 per hour running costs\(^12\)), and in the ECP audit the average response time for a home visit was 1hr 7 minutes - this compares with an average response in one study of 3hrs plus for GP home visits (no details beyond the average response time are known). Faced with long delay patients may panic and either attend an Emergency Department themselves or call 999 for an ambulance, or their conditions deteriorate during the wait leaving the
doctor little option but to refer to hospital\textsuperscript{13}. Patient satisfaction with ECPs attending has been found to be good in the studies undertaken\textsuperscript{14,15}, and hospital attendance out of hours may be reduced\textsuperscript{16}.

- **Emergency Care Practitioners working in 999 Services (Ambulance Emergency Response)**
  
  Much has been made of the use of Rapid Response Vehicles (RRV, Fast Response Vehicles, Single Responders or a variety of other monikers) in reducing the resources needed to meet the 8 minute emergency response target. In practice the RRV plus ambulance is a very inefficient way to respond to Cat A and B calls because of the number of times that an ambulance is required to transport the patient, and is borderline for Cat C calls (based on information in\textsuperscript{1} and from\textsuperscript{17,18,19}).

  There is literature to show that paramedics with extra training can provide safe and effective treatment at point of need (see amongst others\textsuperscript{20}). An ECP (various literature e.g.\textsuperscript{8,10} and in particular information presented in this document) is able to provide much more care to the patient, including resolving many calls at the point of response, and referring patients onwards to different care pathways using their own transport, all of which avoids admissions to hospital\textsuperscript{21,7}. This makes ECPs more operationally effective and frees up other ambulance clinicians to respond to 999 calls.

- **Emergency Care Practitioners working in Primary and Community Care settings**
  
  During training, ECPs typically spend time working in a GP surgery, either caring for patients who attend the surgery or visiting them at home.

  This increases the numbers of staff able to perform in-hours home visits – typically a GP called to do home visits is only able to do them in between surgeries or in the evening. It is possible that visiting patients sooner, using ECPs, will reduce the deterioration in patient condition so that they can be managed at home and will not need admitting, with benefits to the patient experience, patient outcomes and cost of delivery of the whole service.

- **Emergency Care Practitioners in Emergency Departments and Urgent Care Centres**
  
  Another part of a typical training rotation includes caring for patients attending these two centres (by whatever names they are known). Currently there is no evidence to suggest that the ECP is better at delivering care than any equivalent member of the team. It can benefit their own practice. ECPs review the types of conditions which present in urgent care and often increase the level of see and treat without transport at the first point of contact (response to patient)\textsuperscript{22}.

- **Staff Morale and Career Advancement**
  
  Much has been made of roles with new entrants\textsuperscript{23} as a way of boosting staff numbers in
NHS. At present the ECP role is only open to experienced health care professionals, and is designed to retain staff at the peak of their experience and value those professionals who might otherwise leave front-line roles through work related injury or to go into management and training roles.

Having a clear career path beyond paramedic, in the same way that there is a clear career path beyond staff-grade nurse or AHP, will encourage more people both to begin a career as a paramedic, and to work in less urgent areas of health should they wish, or need, to change roles.

Having a clear career path beyond paramedic, in the same way that there is a clear career path beyond staff-grade nurse or AHP, will encourage more people both to begin a career as a paramedic, and to work in less urgent areas of health should they wish, or need, to change roles.
Describing the potential benefits of a new role is very valuable, but until we can examine the actual benefits achieved (perhaps with notes to take into account how new the role is) and the cost to develop staff into the new role (both in terms of staff time and financial cost), it is difficult to demonstrate that a new role really is delivering benefits. The benefits need to be identified, measured, and the impact of these benefits understood; after which the cost of populating the new role with staff needs to be taken into consideration which helps to give an overall cost-benefit for the role to decide whether more or fewer are needed.

It would be tempting to examine what the practitioner does, and justify their existence ‘after the event’. ECPs were developed to solve a particular need, with some associated benefits identified which support their development, and it is more appropriate to start with these pre-identified benefits and measure how far the ECPs goes in meeting this need. We’ve gone into some detail collecting data to demonstrate how far ECPs achieve their original and subsequently identified aims and benefits, and what blocks them from achieving more (evidence used to support or help to change practice), analysed with appropriate statistical tests to ensure that the conclusions are based on safe foundations, and proposed options for the deployment of ECPs. Where particular evidence is not found to be robust, on the whole we have avoided using it or observed that it is anecdotal.

2.1 Benefits Approach

The development of new roles requires investment in either time and/or money. A benefits-led approach makes explicit the balance between the cost of development versus the benefits to be realised:

1. The NHS has to take a commercial approach to the management of its resources.
2. Public expectation requires greater probity over how we spend the public purse, demonstrating what benefits we aim to achieve and for whom.
3. Identifying benefits from the outset provides a framework for monitoring progress along the way. It shows us if we are on track to delivering what we set out to do. It also shows us where the dependencies are between benefits.
What is a benefit

- Something you get from doing something. The 'so what' of delivering an outcome
- Some benefits are negative - i.e. may adversely affect one group of stakeholders
- Benefits should be defined for each group of stakeholders affected by the change (patients/clients/carers, commissioners, provider organisations, managers, employees)
- Benefits should have an identified associated measure. Measurement should occur before the start of the change: target values (measure you are aspiring to) should also be identified. It is good practice to record how the measures will be collected and calculated to ensure consistency

All new roles should be developed with an issue in mind, and with a specific framework of benefits to be achieved. The aim of the role was to help deliver improvements to patients needing emergency and unscheduled care. Initially it had many development names including Practitioner in Emergency Care, Urgent Care Practitioner, Community Paramedic, before selecting the generic term Emergency Care Practitioner. It was based around the need to reduce the numbers of patients attending hospital, and the benefits framework was build up around the four corners of the **Balanced Scorecard for Service Improvement**, namely Clinical Outcomes, Patient Experience, Use of Resources and Staff Engagement. A structured approach to Benefits Realisation Planning ensures standardisation and auditability, which makes it easier to develop new roles consistently.

### 2.2 Measuring Against Target

The ultimate aim of the ECP role is to ensure that users of unscheduled and urgent care receive appropriate care outside of hospital.

<table>
<thead>
<tr>
<th>Performance indicators could include:</th>
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<tbody>
<tr>
<td><strong>Is the care appropriate?</strong></td>
<td>A good measure is to determine patient clinical outcomes and patient satisfaction, except that in the absence of an Electronic Patient Record it can be difficult to follow up patients.</td>
</tr>
<tr>
<td><strong>What level should be set as target?</strong></td>
<td>We proposed current levels</td>
</tr>
<tr>
<td><strong>What quality of care?</strong></td>
<td>From the safety point of view ECPs should provide at least as good care as current services for a given diagnosis – of course these levels can be applied in each health area in which they are deployed</td>
</tr>
<tr>
<td><strong>Are patients being treated outside of hospital?</strong></td>
<td>On average across England 73% of emergency and urgent ambulance service responses result in a patient being taken to hospital.</td>
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1. Performance indicators could include:
In the Out-of-Hours arena, benchmark information is much more difficult to obtain. In the Measurement sections below we can examine how the impact of the ECP activity will be measured, where there is comparative data and where there is not.

**Principles of Measurement**

Healthcare professionals are often too busy to collect data and information which isn’t directly relevant to care of the patient. Running an audit “to see what happens” can cause bad feeling amongst practitioners and service users, whereas a focussed approach to collecting information, such as using the same patient care notes which need to be transferred to the next shift and/or retained for the patient’s doctor to review, is an example of useful collection of data. Healthcare professionals are focussed on care, and demands for data which the professional doesn’t value often result in poor quality data which can be unrepresentative at best and misleading or dangerous at worst.

**Measures That Mean Something**

The measures have to mean something to the clinical professionals that collect them, and also have to be practical. For 999 (emergency and urgent care responses in vehicles to scenes of the incident – a role traditionally filled by ambulances) we can collect baseline measures on the numbers of vehicles responding per incident, the destinations of service users (whether left at home, referred or transported, to social services, community care or
hospital, etc), and the numbers arriving at Emergency Departments by urgent care transport 25.

Assuming that all decisions for patient care are made entirely in the interests of patient care, and that each clinician acts within and to the limits of their capability, experience, training and regulation, we can assume that this baseline represents the best practice with the existing resources.

Our baseline for ECP reporting has meaning for the clinical professionals. There are measures relating directly to efficiency and effectiveness (numbers of vehicles, number of transports) and to clinical outcomes (destination), and the picture can be made richer by including the dispatch code and perhaps a preliminary diagnosis. The time of call (whether In Hours or Out-of-Hours and the pattern through the year, week, time of day), professional type and experience and clinical outcome or destination can be collected for ECPs and compared with the traditional service.

At Emergency Departments it should be possible to collect data on the numbers of cases attending from emergency services. However the numbers of ECPs were small during the period of the study compared to traditional 999 response crews, for example if 5% of crews responding include an ECP, then any change in attendance will fall within the margin for error of attendances at Emergency Departments. We have inferred changes in Emergency Department attendance from practitioner referral patterns.

An example of the difference observed during Out of Hours activity is given above16, but in this case the ECPs provide the whole of the Out of Hours service for that PCT area.

Collecting that is Consistent and Motivating

Dr Henry Brandt is quoted stating “People do what you inspect, not what you expect”, so we structured the questions accordingly. For example, the ECP audit gathers information on avoided admissions.

Recording data many times over (once for this system, another time for that system) is de-motivating for practitioners, as is collecting data without seeing the results. The ECP pilot sites and ECP development organisations have their data presented back to them quarterly so they can see how they are performing individually and as a Trust against the average, and learn from others’ mistakes and successes. We codified the data collection, both to speed up collection and to speed up analysis.

Representative Samples

Sampling Theory gave us a way of preparing averages which reduce the distortion caused by certain enthusiastic individuals and Trusts reporting a disproportionate number of incidents compared with the other Trusts; we used modified averages based on square roots of the numbers of incidents and achieved more consistent results month to month (based on the calculations for differences between means using the t-test 26).

We collected large numbers of activities reported: the analyses of “the ECP Report: Right
Skill, Right Time, Right Place”\textsuperscript{8} were based on over 9800 records – the audit contains over 70,000 records now. In order to ensure consistency we included Trusts in the analysis where there were more than one individual ECP reporting per Trust. The ECP audit was designed to encourage compliance and to ensure that a high proportion of the total number of incidents to which ECPs responded were recorded on the audit database. Over time the data collection has grown richer – relatively simple measures were gathered at the start, and supplemented by more detailed information as practitioners were prepared to collect and report data reliably and consistently.

**What to Measure**

The recording process is different in different environments (999, home visit, urgent care centres, etc). **The 999 environment** (ECPs and ambulance crews) record basic information such as patient age and sex, destination, etc, though the use of these records is governed by Caldicott.

ECPs are a new role and can be asked to record their activity in more detail. At present it is not possible to measure the onward journey or the 28 day outcome for patients in the 999 environment which would tell us the effectiveness of the ECP intervention versus the legacy service (because of the difficulty in tracking an individual patient across NHS organisations – though Mason et al assessed this using a postal questionnaire); however some ECPs routinely call certain categories of patient 24 hours after initial intervention and the 24-hour result can be compared with the initial diagnosis and referral/treatment.

**How to Measure**

Many services already collect information for operational purposes, and with payment by results (PbR) clinical outcomes are often shown. However for ambulance trusts, the outcome recorded is the next patient destination and clinical outcomes are often not easy to determine (for example, the destination is often recorded as a postcode or grid reference rather than a hospital or Emergency Department name). Clinical notes may be stored as free text which cannot easily be interpreted.

In the 999 environment, for example, incidents are triaged, prioritised and allocated to a dispatch code (AMPDS or MPDS)\textsuperscript{27} which reflects the identified reason for the call. The dispatch codes are allocated a priority of response. The responder records time taken to respond and an analysis of responders and incidents means that it’s possible to cost the resource use of this early stage of the patient journey but not to confirm a telephone diagnosis (many calls are made by a bystander where the patient is not conscious or able to speak – at least 45 out of 754 MPDS (5.9\%) codes specify that the patient is not answering for themselves\textsuperscript{29}). We also had to audit ECP activity separately because a number of ambulance trusts did not record what type of professional attended.

In the **Out of Hours** environment, where records can be obtained they are usually a free text detailed patient record or correspondence to the patient’s own GP, which would be difficult to categorise even if we could overcome Caldicott difficulties. Few records are
available and no comparative data are released.

Therefore the ECP data audit was collected independently. At all stages of the measurement regime we consulted with ECPs and other clinical (medical and non-medical) professionals to ensure that the measurement, recording, reporting and interpreting regimes are appropriate for the need to demonstrate safety and effectiveness.

2.3 Reporting

At different phases in the programme we are able to show different things and use them for different purposes:

Startup Measures – What Is Actually Happening?

The ECP national team were not prescriptive in deciding what an ECP should be – having defined the function and desired outcome, we passed role development over to the pilot sites; we then measured and reported the scope, practice and outcomes of the role as development initially radiated outwards from the brief, then converged as sites learnt from each other. This programme approach accounts in great part for the success of the ECP role.

Reporting Measures by Site

Different sites use ECPs in different ways. Most ECPs rotate their practice through two or more of the key areas:

- Emergency response (999)
- Out of Hours home responder, telephone advice and face-to-face
- Self-present environments such as Emergency Department minors, Urgent Care Centre, etc.
- Community Care in hours (GP surgery, home visits)

But different sites may have the ECPs spend longer periods in one part of the rotation (e.g. base the ECPs in Out of Hours because of the cost differential, with other aspects of the rotation for variety), or share activity (e.g. placing ECPs on community responses and home visits, with the opportunity to deploy ECPs on 999 calls where the need is urgent and no other vehicle is available)\(^{11}\).

For ECPs responding to 999 calls they may be deployed by the dispatch desk to either all calls or to specific groups of patients (in South Yorkshire ECPs were initially deployed to all elderly falls calls by preference, and many ambulance trusts still avoid sending ECPs to paediatric calls)\(^ {30}\).

What Forms of Training

Whilst the functional requirement demanded of ECPs are broadly the same across
different sites developing ECPs, this may be reached through more than one training route. The two main training routes are:

- intensive training of 18 weeks with backfill, followed by a consolidation period of 6 months to a year
- modular training with continued practice in between modules, taking upwards of 2 years to complete the training

The cost-effectiveness of different ECP schemes will depend on the different running costs and development costs, which will be affected by the training route undertaken (especially as one route has the potential to prepare qualified ECPs within 9 months whereas the other qualifies ECPs over 2 years – conversely the first requires intensive investment whereas the other spreads the cost of training and backfill).

**Reporting Measures by Incident**

Working directly with patients, ECPs demonstrate their effectiveness on an incident-by-incident, day-to-day basis. These professionals are expensive to train and expensive to deploy, and they only deliver a return on investment to the extent that they replace more expensive resource for the same activity, or reduce the cost of the patient journey compared to what it currently costs by delivering more effectively and efficiency.

Therefore it is important that ECPs record who they treat and how, and that this is compared to the legacy treatment to determine both patient outcomes and cost-effectiveness.

Recording both the responses and the outcomes needs to be replicable, repeatable, and easy to understand and confirm. The ECP team based the measures collected on what the existing professionals record e.g. age, sex, time of week. Preliminary Diagnosis (“Call given as” or AMPDS code in the case of 999) will depend on the training of the diagnostician, and where possible we’ve tried to add an initial diagnosis from the ECP – in the Home Visit environment the diagnosis is recorded in patient notes and therefore not recorded on the ECPs notes either for Doctors or for ECPs.

**How to Collect Data and Information Consistently**

Two keys to consistent data are:

- careful definition of the data, and
- straight forward recording techniques

Data collection process needs to be defined with the practitioners so that they all agree, and the methodology for recording needs to be agreed aside from available technology (some sites have full computerised tools, others need photocopied sheets sent out to them). As long as there is a core of consistent data then where a site is able to gather additional information this can be added to the database.
We also took time to define the process for collecting the data centrally; some sites sent in paper forms, others replicated the national database; still others have their own audit department and communicate summaries of their data with the individual data points compared periodically to ensure consistency of recording.

This way, practitioners are enthusiastic both in recording the data, and in ensuring that it is accurate or at least consistent with other practitioners and other sites.

Robustness and Patient Confidentiality

In general quantity is better than quality – 80% of incidents recorded accurately but in general terms will give a more representative report than 10% of incidents recorded in great detail.

Having defined the measures, the reporting, and the process for recording the measures, we are fairly confident that the data are recorded accurately. With 70,000 incidents recorded, we are confident that we have more than 50% of all incidents. All data reports protect patient confidentiality right from the start – the information available on the national evidence-base includes no patient-identifiable information. Where patients have been followed up either after 24 hours or 28 days, reports only include summary data.

2.4 Cost Effectiveness of ECPs in the Emergency Pathway (999)

• Take to Emergency Departments and avoided admissions

Across all ambulance trusts, in approximately 73% of incidents using legacy responders (Rapid Response Vehicle, Ambulance, Blue Light transport) at least one patient is taken to an Emergency Department\(^1\): this varies from 96% for Category A in one Trust to below 50% for Category C in another – on average 81% of Cat A incidents result in transport, 69% of Cat B and 65% of Cat C, and (using Department of Health definition of Rural and Urban Trusts) on average 75% of Urban incidents result in transport and 70% of Rural incidents\(^3_1\).

ECPs have varying effects on this practice. Mobile ECPs responding to 999 calls on average transport to Emergency Departments in 43% of urban incidents and 25% of rural incidents, though this varies substantially by Trust (averages have been weighted by the number of incidents recorded on the ECP National Audit database as described earlier). Where an ECP is available in the control room to discuss the incident with the caller and pre-qualify, they can diagnose some conditions over the phone and may be able to close some Cat C calls without sending a responder, which can have a significant operational impact on the availability of responding crews for other 999 calls; the % of incidents closed through Hear and Treat is still low (<5%) because hear and treat is not widely used\(^3_2\).

• Attendance at Emergency Departments (hospital and commissioner cost)

There is a direct cost under Payment by Results for patients attending Emergency Departments, and consequently a direct saving from the avoided attendance. Numbers of
people (both ambulance-transport and self-presenting) attending Emergency Departments continue to rise, so in practice an avoided attendance will reimburse at the full tariff price, (although if the activity of ECPs reduces total attendance it will reimburse at half tariff 33). Cost per attendance was calculated based on the Standard Attendance Cost of £61 (05/06) 34 because 999 responders are unlikely to transport minor injury unit cases and high cost cases are likely to continue to need transport.

Based on ECP take to Emergency Departments at 37% versus traditional take to Emergency Departments at 73%, and an ECP activity rate of around 900 incidents per year per whole time equivalent 25,35 this gives a reduction in attendance at Emergency Departments per wte ECP per year of 324 patients, equivalent to £19,764 reduction in cost. With the variation of both activity rate and different impact on take to Emergency Departments, it may not be possible to measure or demonstrate financial savings in operational costs; a “worst case” scenario reports ECPs are cost neutral (not counting avoided admissions), ascribing the full benefit as improved patient care.

- **Admissions (hospital and commissioner costs)**
  
  Taking two examples, Difficulty Breathing and Elderly Fallers7, ECP intervention has a significant impact on admission.

  **Breathing Difficulty:** based on a worst-case scenario, (assuming patients attended by an ECP who are admitted at any time in the following 28 days are counted and that all ECP referrals to Emergency Department are admitted) ECPs reduce admissions by 41% (from 76% to 45% Chi$^2=76.33$ N=1307 df=1 P<.001). At an average tariff (D41, D50, D51, D99) of £2486 per case this represents a substantial saving. In this study, of the patients treated by ECPs, 64% were initially treated at home and of these 14% were admitted over the next 28 days for breathing difficulties. This is a worst case saving – if later admissions were included in the control group the advantages of using ECPs would be even greater.

  **Elderly Fallers:** again based on a worst-case scenario that we should count all patients from an ECP intervention who are admitted within 28 days (although we can assume that many elderly fallers are “revolving door” patients and the control group will also attend and be admitted during the subsequent 28 day period), ECPs reduce admissions by 45% (from 52% to 34% Chi$^2=23.95$ N=998 df=1 P<.001). Elderly patients are represented on a wide range of HRG codes, and a simple average of HRG codes with “elderly” in the description gives an average trim point (proxy for length of stay) of 70 days and cost of £4354 per case.
This work is supported by an earlier study indicating that ECPs were considerably less costly in the use of hospital, other NHS and social services (calculations were not tested for significance but were based on activity differences significant $P<0.01$), and whilst QALY quality of life figures (3 days and 28 days) are higher for patients treated by ECP the differences are not significant.

- **Use of Responders (ambulance trust costs)**

The number of Emergency calls that don’t need some form of care for the patient is below 27% (based on a rate for Emergency Transport of 73%); where RRVs (Rapid Response Vehicles also known as Fast Response Units or variations on this) or ECPs are used as primary responder the number of responders required to attend the incident average as follows:

<table>
<thead>
<tr>
<th></th>
<th>First Responder</th>
<th>Ambulance attends</th>
<th>Average Number of Staff attending (Note1)</th>
</tr>
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<tbody>
<tr>
<td>RRV First Responder</td>
<td>RRV</td>
<td>73%</td>
<td>2.46</td>
</tr>
<tr>
<td>ECP First Responder</td>
<td>ECP</td>
<td>34%</td>
<td>1.68</td>
</tr>
<tr>
<td>Ambulance response</td>
<td></td>
<td>100%</td>
<td>2.00</td>
</tr>
</tbody>
</table>

*Note1 – number of staff attending assumes one staff in the First Responder vehicle and two in the Ambulance – therefore if an ambulance is required 73% of the time then the number of staff attending will be 2x73% (for the ambulance) + 1 (for the RRV)*

Different responders incur different costs – made up of the salary cost of the staff, running costs of vehicles, etc. Depending on the number of responses that each responder does per year, they will incur a different cost per response. Costs calculated as follows:

<table>
<thead>
<tr>
<th></th>
<th>Cost Urban Model</th>
<th>Cost Rural Model</th>
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<tbody>
<tr>
<td>RRV</td>
<td>£40</td>
<td>£87</td>
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<tr>
<td>Emergency Ambulance</td>
<td>£81</td>
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<td>Emergency Care Practitioner</td>
<td>£58</td>
<td>£108</td>
</tr>
</tbody>
</table>
On the face of it, the cheapest response is to use RRV. However the cost of ALL responders per incident can present a different picture (combining the above two tables):

<table>
<thead>
<tr>
<th></th>
<th>First Responder</th>
<th>Ambulance attends</th>
<th>cost per incident (averaged urban/rural)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RRV First Responder</td>
<td>RRV</td>
<td>73%</td>
<td>£166</td>
</tr>
<tr>
<td>ECP First Responder</td>
<td>ECP</td>
<td>34%</td>
<td>£129</td>
</tr>
<tr>
<td>Ambulance response</td>
<td></td>
<td>100%</td>
<td>£134</td>
</tr>
</tbody>
</table>

Although these figures were calculated in April 2005 they will differ in proportion and by only a few percent in today’s environment.

On the basis of 900 responses per wte ECP, the overall cost efficiencies of using ECPs at £5 (see table above) per response are £4,500 per year. Of course regional and site variations in the annual number of responses per year (reported figures gave sensible operational estimate of 400 – 1100 per ECP wte varying by individual as well as by rurality. Costs per ECP per year used to calculate the above average per incident include apportioned costs for clinical review, supervision and governance as required by a senior clinician, though not project management and administration as these were assumed to apply only during the development stages of the ECP project.

Early indications from a more detailed national ECP audit suggest that ECPs may be more effective for some call types, and if effectively targeted could have a higher safe See & Treat rate and less use of other resources (it has already been noted that only 10% of patients ringing 999 have a life-threatening emergency and that a further 10% are elderly fallers and 10% more with long-term sub-acute conditions). A number of Trusts are beginning to experiment with Hear and Treat using ECPs/Nurses in the control room (typically supervised by doctors) which will further reduce the number of calls where an attendance is needed (for example calls where an RRV does not need backup transport). Assuming that numbers of responding crews are one of the main constraints to meeting 8 minute targets, this suggests that a more efficient model of care delivery incorporating a mixed skills team will also be more effective at meeting targets.

2.5 Cost-Effectiveness in Out Of Hours

Rural

There is little or no baseline information to guide calculations on the costs of individual practitioners in Out Of Hours. East Anglia were able to provide information on the cost of an Out Of Hours service provided entirely by doctors, and with varying numbers of ECPs included in the skill mix. This was used to estimate the cost efficiencies in the rural
environment on a per-ECP basis at £62,154, assuming that they were part of a mixed team and the key constraint was location and response time (rather than numbers of incidents).

**Urban**

A different calculation was prepared for an Urban community (London); costs per activity were estimated based on average numbers of calls per 10,000 population\(^{41,42,43}\). An estimate of the cost per home visit using GPs was made based on the proportion of home visits and total cost of service.

A similar calculation can be made for ECPs; ECPs are dispatched to perform home visits where the doctor has already determined that 1) a home visit is required, and 2) the ECP is the most appropriate responder (for more complex cases a doctor would still visit the patient). The cost-efficiency of an ECP in this environment will be an overall net saving of £57,776, again based on some assumptions in the absence of hard data. These two calculations of cost-effectiveness are within 7% of each other.
Calculating the Business Case – Return on Investment

The approximate cost to develop an ECP (training, backfill, equipment, vehicles, supervision, study leave, reflective practice etc) has been calculated from London and from East Anglia, and has been compared with other Ambulance Trusts\(^\text{12}\). Including the cost of backfill, this calculates at approximately £29,000 (range £41167 – £16833) taking into account different models for equipment purchase/lease and different models of training.

Savings per ECP per year (following training) are given below. A sample business case can be prepared based on an ECP spending 1/3 of their time in emergency response work (999), a further 1/3 in Out of Hours and the remaining time in community or Urgent Care Centres.

<table>
<thead>
<tr>
<th></th>
<th>Saving per WTE per year compared to legacy service</th>
<th>Saving per ECP spending 1/3 time in each environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Responses – operational impact</td>
<td>£4,500</td>
<td>£1,500</td>
</tr>
<tr>
<td>Emergency Responses – attendances at Emergency</td>
<td>£19,764</td>
<td>£6,588</td>
</tr>
<tr>
<td>Emergency – reduced admissions Department</td>
<td>NOT INCLUDED in the calculations though savings have been demonstrated</td>
<td></td>
</tr>
<tr>
<td>Emergency – reduced admissions Emergency</td>
<td>£59,965</td>
<td>£19,988</td>
</tr>
<tr>
<td>Out of Hours – home visits activity</td>
<td>Not calculated</td>
<td>Not calculated</td>
</tr>
<tr>
<td>Community or Urgent Care Centre</td>
<td></td>
<td>£28,076</td>
</tr>
</tbody>
</table>

Savings are based on the cost of the legacy service and subtracting the cost of the ECP and team to provide the replacement service, using assumptions given in the text above. A conservative view has been taken (i.e. worst case scenario, smallest saving). In practice savings may be much higher. Therefore based on the calculated average development cost of £29000 it will take approximately a year from qualification to achieve return on the initial investment, i.e. with a programme of training and consolidation, up to 2 1/2 years from the start of the project.

There will be some benefit during the training period, and if the savings through admissions are also realised the return will be achieved more quickly.
The Best Way to Deploy Emergency Care Practitioners

Delivering “Quick Wins” can help to establish an environment and culture which welcomes change. It may be better to deploy a number of ECPs in a single PCT area and none in neighbouring or demographically matched PCTs, so that the impact of the ECP role can be demonstrated both in terms of operational and pathway costs, and the impact on Emergency Department attendance and 999 calls.

Critical mass for ECPs occurs when ECPs represent upwards of 40% of the total responding crews. Telephone resolution of low-urgency calls may also make the service more effective, as it dispatches ECPs to the calls where they can have the biggest effect. Some work has been done on which conditions (AMPDS dispatch codes) the ECPs have the biggest impact and can bring the most benefit (for patients and for resource use). In Out of Hours the proportion of ECPs for optimum effect may be even higher, for example ECPs are used to deliver the Out of Hours service in Sedgefield PCT and Durham Dales PCT with no adverse effect.

ECPs may be more effective working in different areas of health care delivery by rotation; it is now time to examine ways to make the role more effective.

4.1 Measurement during the Growth phase – what would make it better?

The initial ECP measures developed the role and made the case for investment. The next stage is to understand the place of ECPs in the unscheduled and urgent care teams, and the blocks which prevent it from delivering the maximum benefit.

To do this we systematically gathered information from the ECPs themselves.

The data presented for this phase are potentially biased in two significant ways:

1. They represent information from the first, most enthusiastic, tranches of ECPs. This may mean that the ECPs are more cautious to ensure that they make no errors of judgement, or they may take decisions at the limit of their competence which less enthusiastic ECPs in later tranches may not reflect (note this effect was carefully minimised for the ECP Audit by using sampling theory).

2. They represent information from less experienced ECPs, professionals who have only been able to perform the role since the inception of the role and who still have no proper regulation or prescribing rights. Future ECPs will almost certainly treat higher numbers of patients at scene, and perform more activity in a day as the burden of gathering monitoring information by hand on paper is replaced by automatic systems.

There is therefore room for improvement, and many Trusts are already deploying ECPs beyond how the original ECP team nationally envisaged.
Emergency Care Practitioners can do their work better

The most common reasons for ECPs being unable to refer patients to the most appropriate pathway, including direct admission to hospital, is where the receiving clinician refuses to accept a direct referral from an ECP. This can also apply to receivers in non-healthcare areas e.g. social services may insist on a doctor referral.

In the same vein, there are a number of Patient Group Directives which are needed, or prescribing rights for ECPs (some ECPs have prescribing rights from their nurse training which they put to use where permitted), which would give all ECPs the ability to make the right decisions at the point of treatment, as opposed to having to defer the decision to someone else incurring additional use of resource and additional hand-offs for the patient. Sometimes ECPs can make good use of specific pieces of medical equipment, but the case for investment typically needs to be made on the basis of local conditions and local casemix.

As data gathering becomes more targeted, we will know more clearly;

- where ECPs can deliver the biggest improvement;
- how much of the rotation they should spend on Out of Hours to achieve optimum performance here;
- which 999 calls (AMPDS codes) are most appropriate for them to respond to, and what that difference will be;
• what proportion of the community team, the ambulance 999 response team, and the out of hours team should be made up of ECPs; and
• the staged plan to recruit and train enough ECPs to meet this need.

Emergency Care Practitioners perform better

The rotation ECPs follow has an effect on their practice in each part of their activity\(^48\). This is especially noticeable following a period spent in an Emergency Department or Urgent Care Centre, where ECPs experience first-hand the conditions brought in and how many do not need to attend, the number of patients treated at scene increases, in some cases dramatically\(^48\). This also ties in with other research, which suggests that over 40% of patients attending Emergency Departments do not require Emergency Department treatment (were classified as HRG code V08)\(^49\).

ECPs should have a placement with a GP during training and it is anticipated that they will have regular placements with community teams; this further broadens their experience and enhances practice.

The Public and other Health Professionals Trust ECPs

This may be self-evident, but many of the public don’t get concerned which type of healthcare professional is diagnosing and treating them – they assume, probably quite correctly, that a healthcare professional will work within their own competence and if they feel that the need is greater than their competence that same professional will refer to another professional with more or more specialist competences.

Public satisfaction with both ECPs and paramedics were found to be extremely high\(^50,51\), with patients rating ECPs higher in two areas “thoroughness of assessment” and “explaining what happens next”. Certainly the appearance of ECPs on popular television dramas such as Holby City and City Hospital has helped their profile with the public.

Health professionals are becoming more trusting of new roles as evidenced by a greater acceptance of ECP direct referrals and creation of new pathways for patient care. ECPs have so far had no untoward incidents which were caused by professional mis-judgement or lack of skill on the practitioner’s part\(^52\). Some professional bodies still object to the development of ECPs, and lack of published evidence is often cited; this chapter presents some of the available data to assist with the acceptance process.

The case for investment is by and large understood and replicated in different environments, for different employers, and in different regions of the country.
The third and last area for measurement is the ongoing monitoring of the safety of practice. Throughout the development of ECPs we have monitored the safety of the role, in as much as it is possible with no simple way of following patient outcomes beyond the ECP. At the point a project reaches this phase of measurement we’re not trying to show anything new and typically don’t expect much to change, but factors such as governance, ongoing competence assessment and re-registration, complaints, Department of Health quality standards and so on are the focus. If a radical change is highlighted during this phase then typically the local health community should return to Growth-type measures to monitor the change and optimise it.

Most ECP projects are still in the growth phase of measurement. There are some examples of longitudinal study which demonstrate ongoing governance, e.g. One ECP in a GP surgery practice followed up patient outcome after 28 days (over a period of 6 months) to determine if the ECP outcomes were different from those of patients seen by the GP or district nurse. There were no differences in outcomes indicating that for the patients who attended the ECP, the healthcare professional had appropriate competences to diagnose and treat them. As the ECP was working under the supervision of a GP it is likely that the patients attending the ECP were assigned appropriately to the ECP’s skills.

5.1 Options and range of impact

A question which comes up frequently, in different forms, is “what are my options?”. Employers and commissioners want to understand whether there are other roles which can fulfil the same role or part of the role; whether they can deploy ECPs to a different rotation; where they can recruit ECPs onto the training courses or recruit fully-trained ECPs?

Different Roles

For the report “Taking Healthcare to the Patient” detailed analysis compared different emergency responder practitioners, including emergency medical technicians, paramedics, advanced paramedics with specialist training in elderly care, and ECPs. The work concluded that alternately trained advanced or specialist paramedics performed well from the patient perspective, delivering excellent care equivalent to that provided by ECPs for particular groups of patients, but that operationally they were more expensive per response because of constraints on which calls they could respond to. It’s notable that one of the main sites for specialist paramedics (South Yorkshire) has converted them to ECPs.

As stated above, ECPs perform a similar role to an existing or new practitioner in each of the health areas in which they work. For example in community care they perform a similar role to a district nurse, and in a GP surgery may perform similar functions to a
Medical Care Practitioner. Their great strength is in being able to rotate: they bring insights and experience from each part of the rotation of environment into each of the others, they also serve as a pool of capability, able to perform primarily proactive work whilst there are no emergencies, at the same time trained to respond should an emergency such as a terrorist attack or major accident occur.

Different rotation

The actual rotation that the ECP follows will depend on local need. In some areas the ECPs mainly work in one part of the service (e.g. in Sedgefield and Durham they work mainly in Out of Hours, in Hull in GP surgeries, in London mainly in 999 responses and primary care), and may only spend limited time in other health areas. In many cases the local community has other practitioners fulfilling the role in different health areas, taking advantage of the flexibility of the ECPs role.

Different base skill mix

The ECP role is primarily a front-line role and it is highly recommended that all ECPs should have a health background, i.e. from a paramedic, nurse, AHP or military medical background.

One Trust has demonstrated that Emergency Medical Technicians can train to become ECPs after a short period of experience, though on examination of the curriculum we see that they have to qualify as paramedics before they can complete their ECP qualification.
This document examines the impact observed to date from the ECPs. As stated earlier, the results represent new recruits who may be more enthusiastic but will also lack confidence to deliver the benefit they could.

Even based on this constrained practice, the case for ECPs seems to be made. We believe that ECPs will perform better (more activity, sent to more patients, therefore reduced costs per incident and overall) and deliver bigger benefits (able to refer to more pathways, equipped and regulated to care for patients with more conditions at the incident), which will make the economic and health case even more strongly.

This is not to take away from other new and advanced roles – where there is a known requirement for e.g. Community Matrons then they should be recruited and deployed because they have a caseload of named patients which ECPs do not have. But the flexibility of ECPs makes them a valuable addition to any health community.
References


3 The future role and education of paramedic ambulance service personnel (subcommittee of Joint Royal Colleges Ambulance Liaison Committee and the Ambulance Service Association 5 Jan 2000) www.asancep.org.uk/future_role.htm

4 Delivering Quality and Value – Focus on: productivity and efficiency (1 Reduce Avoidable Emergency Admissions) NHS Institute for Innovation and Improvement 2006, Gateway Ref 6417.

5 Barnsley NHS Foundation Trust records 54% of patients in 2005-06 attending A&E were HRG code V08, which means minor treatment or no treatment requiring no follow-up; other A&E departments anecdotally agree with this figure. V08 HRG code was only introduced for year 2006-07 therefore statistical data is not available before then.


7 Avoiding Admissions from the Ambulance Service (Gray JT) Yorkshire Ambulance Service, Jan/Feb 2007).

8 The Emergency Care Practitioner Report - Right Skill, Right Time, Right Place (Department of Health October 2004).


10 Transforming Emergency Care in England, A report by Professor Sir George Alberti (Department of Health October 2004 Gateway Ref 3969).

These figures were calculated during the preparation of the research for The ECP Report (see reference 8) and were discussed with Out of Hours providers. Subsequent calculations e.g. for Taking Healthcare to the Patient have supported this benefit.


EAAS reported high levels of patient satisfaction in an internal report on Community Paramedics working in Out of Hours, written in 2003.


Darlington Memorial Hospital reported reduction in A&E attendance of 50 cases per month (4.44%) over Apr-Jun 2004, outside the seasonal expected variation by more than 3 Standard Deviations (P<0.01), at the same time as ECPs took over the Out of Hours service.


South Yorkshire Ambulance (now Yorkshire Ambulance Service) internal monthly reports


Many ambulance staff suffer back and knee injuries associated with their work* - retirement due to industrial injuries from ASA 2004 report

ECP Audit – comparison with baseline reports obtained from Ambulance Trust AMPDS and MPDS audit systems


Analysis of 2005/06 AMPDS codes by DH category, from Appendix 1 of 2005/2006 Call Determinants (Assigning Urgency Categories to AMPDS calls) (27)

Making a Difference – the impact of new roles in Healthcare (Minney H) Kingsham Press 2007

ECP Audit (36) – 9% 0-11 age range compared with typical ambulance

Further analysis of the data in Ambulance Services, England 2005-06 (1)

Work in preparation – North West Ambulance indicates more effective dispatch of ECP where ECP is in control room running dispatch, and London Ambulance indicates that a proportion of Cat C calls can be triaged effectively by ECP or GP, in contrast to the results from (19)

PbR development - Differential tariff and unbundling (Department of Health September 2006), Gateway Ref 6756


ECP activity rate based on information provided by a number of Ambulance Trusts. This takes into account that ECPs rotate through other areas of practice and many are still undergoing training, and this activity rate is scaled to equivalence with a whole time equivalent practitioner
Based on ECP audit to Nov 2005 9810 incidents, 27% transport to A&E (2364 transport) SD 12% points.

Calculated from internal audit figures made available by London Ambulance Service and East Anglia Ambulance Trust in 2004, reviewed by Greater Manchester Ambulance Service. The first calculations were used in The ECP Report (8), and these were revised and updated for Taking Healthcare to the Patient (38)

Taking Healthcare to the Patient – Transforming NHS Ambulance Services (Department of Health Gateway Ref 5133) June 2005


A number of Operational Research in Health (ORH) research reports examine the impact of deployment and numbers of crews on the achievement of targets e.g. A8 and changed clock start

Raising Standards for Patients – New Partnerships in Out-of-Hours Care (Department of Health) October 2000

The demand for out-of-hours care from GPs: a review (Salisbury C) Family Practice 2000; 17: 340–347

The use of out of hours health services: a cross sectional survey (Brogan C, Pickard A Gray J, Fairman S, Hill A) BMJ 1998;316:524-527


Emergency Care Practitioner “Telephone Assessment and Treatment in the Out of Hours Service” Sedgefield Primary Care Trust / Durham Dales PCT. (Moran J) internal report reported on NHS Networks Demand Management April 2006


ECP rotation has an impact on activity (LAS work on ECPs through A&E/UCC)

Categories of A&E attendee at Barnsley Hospital NHS Foundation Trust internal report December 2006 – showed V08 patients 43%


53 Analysis of an ECP in Community Care (Greenwood S) presented at ECP leads meetings 2006 and subsequent research spring/summer 2007

54 Studies on ECPs in South Yorkshire (Gray J, Perrin J) 2005


56 A national evaluation of the clinical and cost effectiveness of Emergency Care Practitioners – Phase one (Mason S, Coleman P, Ratcliffe J, Turner J, Nicholl J. ScHARR University of Sheffield) July 2004

57 Should emergency medical technicians be considered for the role of the emergency care practitioner? (Halter M, Marlow T, Jackson D, Moore F and Postance B) Em Med J 2006;23:888
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